

IV.—*Descriptions and Records of Bees.*

By T. D. A. COCKERELL.

Exomalopsis verbesinæ, sp. n.

♀.—Length hardly 7 mm.

Black, with yellowish-white pubescence, snow-white on sides of face; a few dusky hairs fringing the median bare area on thorax; vertex shining, impunctate; clypeus with a few large punctures, its anterior edge narrowly reddish; mandibles with a red spot on middle; flagellum bright ferruginous beneath except at base, and also above at apex, the last joint with a shining oblique truncation; scutellum anteriorly bare, posteriorly with a very heavy fringe of hair, which intrudes on the middle of the postscutellum; tegulæ hairy, very dark brownish; wings clear, slightly milky, nervures and stigma piceous, stigma short, venation as in *E. solani*; legs black, the tarsi becoming ferruginous, the small joints bright red, with black claws; scopa of hind legs very long, yellowish white, fulvous on inner side of tarsi; abdomen shining, segments 2 and 3 with narrow but very conspicuous pure white marginal hair-bands; a very short line of the same character is on each side of the first segment; bases of third and fourth segments broadly seal-brown; apical segments with a good deal of white hair; venter rather bright ferruginous.

Hab. Mesilla Park, New Mexico, at flowers of *Verbesina exauriculata*, June 19 (Clarence Rhodes).

The anterior declivity of the first abdominal segment is bounded by a strong rim. The species probably belongs to the group *Anthophorula*, and will have a yellow or white clypeus in the male. It is allied to *E. (Anthophorula) Bruneri*, Crawford, which visits *Helianthus* in Nebraska. The date, June 19, seems early, but I suppose I rightly interpret the figures "19 6" written by Mr. Rhodes on the label.

Anthophora sp.

From the nests of a species of *Anthophora* (the bees not seen) my wife took a living specimen of the remarkable Meloid beetle *Hornia minutipennis*, Riley, at Colorado Springs, Colorado, in May.

Melissodes machærantheræ, sp. n.

♂.—Length almost 15 mm.

Black, with white to yellowish-white pubescence, nowhere

mixed with black or fuscous; eyes (when dry) light greenish yellow; facial quadrangle much longer than broad; clypeus (except the usual lateral spots), labrum (except an elongate median black mark), and a spot at base of mandibles light yellow; mandibles mainly ferruginous; vertex seen from in front moderately elevated; hair of occiput very long, abundant, and white; antennæ reaching to base of abdomen, scape pubescent, flagellum dull ferruginous beneath, except first and basal half of second joint; flagellar joints above with their apical margins very narrowly white-ringed; fourth antennal joint much longer than fifth; hair of thorax dull white; mesothorax dull, very densely malleate rather than punctured; tegulæ dark orange-ferruginous; wings with a yellowish tinge, slightly dusky on apical margin; nervures dark ferruginous; legs black, with white hair, small joints of tarsi ferruginous, hair on inner side of basal joints of tarsi orange; abdomen very dark brown, with the bases of the segments becoming black and their hind margins pallid, the pubescence white (pale yellowish on last segment), forming more or less distinct bands on the third to fifth segments; subapical lateral spines large, apical plate broad; venter hairy.

Hab. At flowers of a tall species of *Machæranthera*, near the White Sands, New Mexico, Sept. 30, two males (*Cockerell*); Buckeye, Arizona, at flowers of *Cucurbita palmata*, one male (*Cockerell*).

Larger than the male of *M. obliqua*, with the fourth antennal joint longer and the notches at the sides of the apical plate of the abdomen (so conspicuous in *obliqua*) barely indicated. The size agrees with *M. Townsendi*, which has the pubescence quite different; the underside of the flagellum a very lively (instead of dull) ferruginous, which extends to the extreme base; and the apical plate very hairy, with a strong black rim which is not in the least notched. The wholly pale hair of the ventral surface of the abdomen separates it at once from *M. comanche*, Cresson, and the longer antennæ from *M. texana*, Cresson.

While on *Melissodes*, it is desirable to mention that Mr. Viereck has examined Cresson's types of *M. bituberculata*, *M. afflicta*, and *M. Sumichrasti*, and finds that all three belong to the genus *Diadasia*. *M. toluca* and *M. apacha* have been already referred to *Diadasia* by Mr. Fox.

A female *Melissodes* from Phoenix, Arizona, Oct. 15, at flowers of *Helianthus annuus*, is apparently the female of *M. machæranthera*. It has the general build of ♀ *M. obliqua*,

but has the femora, the ventral surface of the abdomen basally, and the thorax below the wings bright ferruginous, while the clypeus, scutellum, metathorax, basal part of first abdominal segment, &c. are dull red. The hair on inner side of hind tibiæ and tarsi is light ferruginous. The antennæ are as in *M. obliqua*, but clearer red, and the wings are hardly so dark.

Melecta interrupta, Cresson.

This insect occurs in New Mexico in two varieties, which may possibly prove to be distinct species. Unfortunately the species is rare, and only a few specimens have been collected. As the New Mexico varieties do not precisely agree with the typical form from Texas, they are herewith described:—

Var. *fallugiæ*.

Pubescent markings bright orange-fulvous (pale ochraceous or tawny in the type); mesothorax extremely densely punctured, so as to be dull; the most distal point of third submarginal cell not much above its middle.

Pecos, N. M., June 27, at flowers of *Fallugia*, 1 ♀ (*M. Grabham*); Continental Divide, La Tenaja, N. M., Aug. 2, 1 ♀ (*C. H. T. Townsend*).

Var. *rociadensis*.

Pubescent markings pale ochraceous, those on abdomen white shaded with ochraceous; disk of mesothorax with the punctures well separated, showing the shining surface between; the most distal point of third submarginal cell conspicuously above its middle. Looks like a large *M. miranda*, but easily distinguished by the dark wings and tegulæ and the shape of the abdominal markings.

Rociada, N. M., Aug. 10, 1 ♂ (*Cockerell*).

Melipona ligata, Say.

San Rafael, State of Vera Cruz, Mexico, middle of July, at flowers of plant no. 31 (*Cordia* sp., probably *C. ferruginea*). Collected by Prof. C. H. T. Townsend.

Eulema surinamensis (L.).

Vicinity of San Rafael, State of Vera Cruz, Mexico, March 23 and 26, at flowers of plants nos. 14 and 21 (*C. H. T. Townsend*).

Exomalopsis mellipes, Cresson.

San Rafael, State of Vera Cruz, Mexico, at flowers of plant no. 31 (*Cordia* sp., probably *C. ferruginea*), middle of July (*C. H. T. Townsend*).

Epeolus Martini (Ckll.).

Epeolus remigatus, var. *Martini*, Ckll. *Canad. Entom.* xxxii. p. 362 (1900).

In the collection of the Colorado Agricultural Experiment Station are specimens taken in Colorado; and after studying them, I feel satisfied that they represent a valid species.

Xenoglossodes imitatrix, Ckll. & Porter.

Glorieta, New Mexico, Aug. 16, 1903, 1 ♀ (*W. P. Cockerell*).

The specimen has a red stripe on the mandibles.

Diadasia rinconis, Ckll.

Pecos, New Mexico, Aug. 4, 1903, 1 ♀ at flowers of *Opuntia arborescens*.

Lithurgopsis apicalis (Cresson).

Pecos, N. M., Aug. 4, 1903, 1 ♂ at flowers of *Opuntia arborescens*.

The first recurrent nervure enters the second submarginal cell at its extreme basal corner; in some specimens of this species it enters some little distance from the base.

Euglossa cordata (L.), var. *Townsendi*, nov.

Hair of vertex and dorsum of thorax nearly all black; a band of black hairs (conspicuous in lateral view) from eye to eye in front of ocelli; hair of occiput and cheeks white, with a slight yellowish tint; wings strongly dusky. Disk of clypeus in male brilliant purple.

Hab. Vicinity of San Rafael, State of Vera Cruz, Mexico, ♂, March 12, "in nest"; females with the same data (*C. H. T. Townsend*).

Perhaps a distinct species.

Anthophora euops, Ckll.

Prospect Lake, Colorado Springs, Colo., at flowers of *Aragallus Lamberti*, May 22, 1 ♂ (*T. & W. Ckll.*).

In fresh specimens the mesothorax is densely covered with greyish-white hair, strongly mixed with black.

Synhalonia frater (Cress.), subsp. *aragalli*, nov.

♀.—Mandibles entirely black; eyes in life black; light parts of abdominal bands very pale ochraceous (not white or ashy); shining hind margins of first two segments narrower, and that on third reduced to an extremely narrow streak; dark apical hairs sooty or seal-brown (not at all ferruginous); last ventral hair-band deep strong ferruginous, edged with whitish.

Hab. Prospect Lake, Colorado Springs, Colo., at flowers of *Aragallus Lamberti*, May 22 (*T. & W. Ckll.*).

Synhalonia crenulaticornis (Ckll), subsp. *lippiae*, nov.

♂.—Averaging perhaps slightly larger; clypeus yellow, except the broad hind border, the upper margin of the yellow therefore with a pyramidal outline; fourth antennal joint averaging longer.

Hab. La Cueva, Organ Mts., N. M., prox. 5300 feet, at flowers of *Lippia Wrightii*, Sept. 5 (*C. H. T. Townsend*); also three collected by Prof. Townsend at Dripping Spring, Organ Mts., N. M., Aug. 10.

Easily known by the large amount of yellow on the clypeus; the middle part of the labrum is also yellow, whereas in true *crenulaticornis* the whole labrum is black.

Sphecodes pecosensis, Ckll.

Cheyenne Cañon, Colorado, at flowers of *Prunus*, May 18, 1904, 2 ♀ (*W. P. Cockerell*).

New to Colorado. The specimens are a little larger than the type. The hair at the end of the abdomen is sooty, and there is a deep constriction between the first two dorsal abdominal segments.

Agapostemon viridulus (Fabr.).

Colorado Springs, Colo., at flowers of *Taraxicum taraxacum*, 1 ♀, May 10 (*W. P. Cockerell*).

Heriades gracilior, Ckll.

Heriades gracilior, Ckll. Ann. & Mag. Nat. Hist., Aug. 1897, p. 138.

? *Trypetes barbatus*, Robertson, Trans. Amer. Ent. Soc. xxix. (1903) p. 171.

Females from Las Vegas, New Mexico, at flowers of *Convolvulus arvensis*, June 17 (*Cockerell*), and Pecos, N. M., July 15 (*W. P. Cockerell*), agree with *H. gracilior*, but also

agree with Robertson's very brief description of his *barbatus*. I do not positively assert that the species are the same, not having compared specimens.

PROSOPIS.

At Pecos, New Mexico, June 9, 1903, I collected at flowers of *Salix* four males, which prove to be two *P. mesille*, Ckll., and one each of *P. divergens*, Ckll., and *P. asinina*, Ckll. & Casad. *P. divergens* is new to New Mexico; the specimen has clearer wings than the type.

PSEUDOPANURGUS, Ckll., 1897.

Protandrenopsis, Crawford, 1903, is the same genus. *P. fraterculus* (Ckll.) is apparently a valid species, and not a synonym of *rugosus* as asserted by Robertson.

Pseudopanurgus pectidellus, sp. n.

♀.—Length slightly over 7 mm.

Similar to *P. fraterculus*, but differing as follows:—Facial foveæ longer and less divergent from the eye-margin above; tips of antennæ bright ferruginous; vertex very closely punctured all over, without tubercles, but with the sides faintly elevated; mesothorax narrower, much more closely punctured; wings much paler, strongly dusky only at apex; stigma smaller; the very short basal enclosure of metathorax strongly transversely ridged, with the area below it strongly shining; abdomen not so broad. From *P. mexicanus* (Cresson) it differs by having the abdomen hairy only at the extreme apex; from *P. scaber* (Fox) by having the clypeus densely punctured all over, without a central line, the dorsulum closely punctured, &c. The tegulæ have a dark reddish spot, and the hind border of the prothorax and tubercles are margined with short but dense white pile. The labium is shining, with a delicate longitudinal keel.

Hab. Soledad Cañon, Organ Mts., New Mexico, at flowers of *Lectis papposa*, 3 ♀, Aug. 15 (*C. H. T. Townsend*). They were taken in company with *Perdita solitaria*, Ckll.

Andrena Vierecki, sp. n.

♀.—Length about 10 mm.

Black, with ochraceous pubescence; antennæ wholly black, joint 3 about as long as 4+5; base of antennæ surrounded with long ochraceous hair; clypeus exposed, shining, strongly but not very densely punctured, with a faint median ridge;

mandibles black, the extreme tip faintly reddish; process of labrum with a concave truncation; facial foveæ broad but short, going little below level of antennæ and not departing from orbital margin; thorax with abundant erect hair, pale fulvous dorsally, with no black intermixed; mesothorax dull and microscopically tessellate, with minute scattered punctures; enclosure of metathorax minutely roughened, scarcely defined except by absence of pubescence; legs black, scopa on hind femora and tibiæ abundant and dense, hind knees with a fringe of sooty hairs; hair on inner side of basal joint of hind tarsi pale; tegulæ shining very dark brown; wings strongly yellowish, greyish at apex; stigma and nervures yellowish ferruginous, second submarginal cell much broader above than third; abdomen broad, minutely roughened, not punctate, with dense ochreous hair-bands on hind margins of segments 2 to 4, that on 2 broadly interrupted in the middle; apical fringe rather pale sooty. In Robertson's tables runs to *A. salicis*, but is quite distinct from that by the short facial foveæ and dense abdominal bands.

Hab. Colorado Springs, Colorado, April 22, at female flowers of *Salix*, collected by W. P. Cockerell.

Named after Mr. H. L. Viereck, who is doing such excellent work on *Andrena*. Mr. Viereck tells me that *A. Vierecki* is allied to *A. pacta*, Vier., but it has the dorsulum dull (shining in *pacta*) and the fimbria dusky (ochreous in *pacta*).

Andrena leptanthi, Viereck & Cockerell, sp. n.

♂.—Length about 9 mm.

Black, with long ochraceous pubescence; clypeus smooth and shining, with sparse shallow punctures, not concealed by hair, *bright lemon-yellow*, except the narrow anterior margin and the usual two spots, which are broadly V-shaped; facial quadrangle broader than long; clypeus much produced; malar space very large, almost square; mandibles black, faintly reddish at apex, very long and curved, with a short inner tooth; process of labrum rather broadly truncate, the corners rounded; antennæ long, black, faintly brownish beneath, joint 3 perhaps a trifle longer than 4+5; cheeks broad, the sides of the head behind produced into prominent angles about level with the middle of the upper half of the eye; mesothorax rather shining, with distinct but sparse punctures; enclosure of metathorax small, without a rim, minutely rugose, with a slight tendency to wrinkling; legs, including tarsi, black, with reddish-ochreous hair; tegulæ dark; wings slightly greyish, strongly so at apex; stigma

brownish ferruginous, nervures dark brown; second sub-marginal cell very little broader above than third; basal nervure passing a short distance basad of transverso-medial; abdomen shining, impunctate, thinly hairy, with longer hair on first two segments. Related to *A. bipunctata*, Cress., and *A. trevoris*, Ckll., but very distinct.

Hab. Maniton, Colorado, 6630 feet, April 28, 1904, at flowers of *Ribes leptanthum*. Collected by T. D. A. and W. P. Cockerell.

Mr. Viereck writes:—"Represented in coll. Am. Ent. Soc. by 3 ♀ and 4 ♂ from Nevada: the ♀ is covered all over with brown pubescence and has a variable yellow spot on the clypeus; this yellow spot is only faintly indicated in one specimen." The species belongs to a group consisting of *A. leptanthi*, *A. Porteræ*, and a new species from New Jersey and Connecticut which will be published by Mr. Viereck.

Andrena Porteræ, Ckll.

This black species is new to Colorado. Maniton, April 28, at flowers of *Ribes leptanthum*, 2 ♀; Cheyenne Cañon, Colo., at *Ribes leptanthum*, May 11, 1 ♀ collected by Miss Winifred M. Shumway; Roswell, Colo., at *Ribes longiflorum*, May 14, 1 ♀ collected by W. P. Cockerell.

Andrena erythrogastra (Ashmead).

Colorado Springs, Colo., at female flowers of *Salix*, May 10, 1 ♀ (*W. P. Cockerell*); Prospect Lake, Colorado Springs, at *Salix*, May 22 (*T. & W. Ckll.*).

Nomada suavis, Cresson.

Palo Alto, California, Aug. 16, 1895 (*V. L. Kellogg*).

Nomada ultima, Ckll.

Palo Alto, California, April 6, 1892 (*V. L. Kellogg*). New to California.

Nomada fragilis, Cresson.

Halfway House, Pike's Peak, Colorado, about 8900 feet, at flowers of *Salix*, May 30, 1 ♂ (*Cockerell*).

Nomada Frieseana, sp. n.

♀.—Length about 9 mm.

Just like *N. rubicunda* of the Atlantic seaboard, except for

the following characters:—Third antennal joint much shorter, being hardly longer than its apical breadth; fourth also shorter; flagellum amber-coloured on both sides, though darker above; wings without the yellow shade; scutellum and axillæ of the same red colour as the mesothorax; hind femora without a black stain in front, though there is one behind; second abdominal segment with a large pyriform white mark on each side; the white on segments 2 to 5 interrupted sublaterally, 5 with a good deal of red; apical ventral bristles largely pale.

Hab. Prospect Lake, Colorado Springs, Colorado, May 22, 1904 (*T. & W. Ckll.*).

Named after the greatest living authority on Apoidea.

Nomada semiscita, sp. n.

♂.—Length $7\frac{2}{3}$ mm.

Runs in my tables to *N. scitiformis* and has no supra-clypeal mark, but differs thus:—Face-marks lighter yellow; lateral marks larger, reaching to the level of the antennæ; fourth antennal joint shorter, not much longer than fifth; pubescence of thorax &c. white, not at all yellow; basal nervure meeting transverso-medial; spine of anterior coxa short and red; abdominal markings very pale yellow on first segment, bluish white on the others; apical plate dark red (black in *scitiformis*).

Hab. Prospect Lake, Colorado Springs, Colorado, May 22, 1904 (*T. & W. Ckll.*). At flowers of a *Senecio* of the group *S. aureus*.

Although this and the last were taken at the same time and place, I do not feel at liberty to consider them sexes of one species. Not only do the tegulæ differ in colour (bright ferruginous in *Frieseana*, pale yellow in *semiscita*), but the third submarginal cell in *semiscita* has a small appendicular nervure, wholly wanting in *Frieseana* and *scitiformis*. In life the eyes of *Frieseana* ♀ are pale red, of *semiscita* ♂ pale yellowish green.

Xylocopa nautlana, sp. n.

♀.—Length about 30 mm.

Similar to *X. morio* (Fabr.), with the same shining black body, black pubescence, and brown-black wings with a strong purple iridescence. The labrum has the same three protuberances, the clypeus has the same structure, and the punctuation is about the same. The second abdominal segment has very numerous, small, feebly-impressed punctures, whereas in *morio* it is smooth, with scattered, mostly

rather strong, punctures. The ridge in front of the ocelli is very strong, forming a double arch, without any prominent lateral eminences. The deep space under this ridge is filled with pollen, for what reason I do not know. In *morio* the ridge is not so strong and in the middle it sends downwards a process which encloses the middle ocellus, which is not at all the case in *nautlana*. There is a tuft of dark reddish hair at the apex of the abdomen, almost hidden amongst the black. Hind tibiæ with two teeth (side by side) on the middle of the outer side.

Hab. Rio Nautla, in the neighbourhood of San Rafael, State of Vera Cruz, Mexico, March 18. At flowers of plant no. 18 (*C. H. T. Townsend*).

Xylocopa brasilianorum (L.).

Vicinity of San Rafael, Vera Cruz, Mexico, March 18, at flowers of plant no. 18 (*C. H. T. Townsend*).

The hind tibiæ have on the outer face an oblique keel ending in two low but broad teeth; the prominence between the antennæ is quite large.

Xylocopa colona, Lep.

Vicinity of San Rafael, Vera Cruz, Mexico, ♀ March 23, at flowers of plant no. 21; males March 23 and 30 (*C. H. T. Townsend*).

The female is easily known from *brasilianorum* by its smaller size, more closely punctured abdomen, and shorter third antennal joint. The male, which Smith described as *X. erratica*, has an extremely strong superficial resemblance to *X. collaris*, Lep., from the Khasia Hills, India. The form of male *collaris* which thus resembles *erratica* is the variety mentioned by Bingham (*Hymenop. Brit. India*, p. 543), in which the whole thorax is covered with ochraceous pubescence, and the third abdominal segment is provided with an ochraceous down like the second. This variety, which may be called var. *Binghami*, I have received from Mr. Sladen.

V.—On the Coleopterous Group “Heptaphyllini” of
De Borre. By GILBERT J. ARROW, F.E.S.

IN the monographic Catalogue of the Trogidæ, published in 1886 by M. Preudhomme de Borre, that family is divided into five sections, one of which, the Heptaphyllini, was created